68* Evaluation of new guidelines for the eradication of *Staphylococcus aureus* in children with cystic fibrosis

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Introduction: *Staphylococcus aureus* (*S. aureus*) is a major cause of pulmonary infection in CF patients. In 2004 our unit introduced more aggressive antibiotic treatment guidelines. Every episode of *S. aureus* growth received at least 4 weeks oral treatment with flucloxacillin or co-amoxiclav with the addition of a second anti-staphylococcal if growth persisted after 2 weeks. This was combined with attempted eradication of nasal carriage using topical agents. Increases in *Pseudomonas aeruginosa* isolation were closely monitored due to concerns about long term anti-staphylococcal usage.
Methods: Patient records of all patients growing *S. aureus* in the year 2004 were retrospectively reviewed. Data on adherence to the guidelines, successful eradication of *S. aureus*, lung function parameters and *P. aeruginosa* isolation were collected.
Results: 109 episodes of *S. aureus* growth in 53 patients were identified. Adherence to the guidelines was 96%. There was successful eradication of *S. aureus* in 78% of cases. Time to re-growth varied from 6–60 weeks (mean 26 weeks). FEV1 improved by a mean of 6.6% following eradication therapy. *P. aeruginosa* isolation rate for 2004 remained static.
Conclusion: With the introduction and implementation of aggressive anti-staphylococcal therapy good eradication rates of *S. aureus* were achieved and sustained. There has been no demonstrable increase in *P. aeruginosa* isolation to date. A longer observation period is required to identify further risks and benefits.

69 Healthcare costs of infection with the major transmissible UK *Pseudomonas aeruginosa* strain, LES

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The Liverpool epidemic strain of *Pseudomonas aeruginosa* (LES) is widespread throughout UK CF clinics, and as well as exhibiting greater resistance to antibiotics than other strains, we have shown it to cause increased morbidity (Thorax 2004;59:334–6). To assess the effect this has on consumption of health care resources within the CF community, we compared the need for IV antibiotics in our cohort of 127 LES patients with the 70 infected with unique *Pseudomonas aeruginosa* strains attending our large CF unit over a 6 month period (Jan-Jun 2006). The two groups had a similar age (mean 24 years [range 17 to 51] versus 25 [18 to 49]) and spirometry (mean FEV1%: 66 [20 to 132] v 73 [22 to 128]; $t = 0.98$, $P = NS$). More LES patients required IV treatment (71 v 21, $\chi^2 = 10.84$, $P < 0.001$) but the proportion given outpatient IVs was similar (29 episodes in 24 patients v 16/11, $P = NS$). However, more LES patients required inpatient IV therapy (62 v 16, $\chi^2 = 12.71$, $P < 0.001$), and although the number of courses was not proportionally greater, LES patients spent longer in hospital each time (average 13.8 days versus 11.2, $P < 0.02$). A wide range of different antipseudomonal antibiotics were used for each group both as inpatients and outpatients.
Thus, we have shown that patients infected with LES not only require more treatment than the remainder, but that more of this treatment needs to be given in hospital. As a result of this, LES patients consume more bed days (average 22.2 per infected patient per year) than those infected with unique *Pseudomonas aeruginosa* strains (average 6.8 per patient per year), underlining the need to prevent cross infection with this organism in the CF community.

70 Initial colonization with *Pseudomonas aeruginosa* in cystic fibrosis: preliminary results of an eradication protocol

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Antipseudomonal therapy at the time of early *Pseudomonas aeruginosa* (PA)infection has been used in CF patients in order to try to eradicate this pathogen but the optimal drug regimen is not established.
Objectives: Evaluate the rate of eradication of initial PA isolation in CF patients that received systemic and inhaled antibiotics following a standard protocol.
Material and Methods: Between Feb/04 and Jan/07 sixteen patients, 9M/7F, were evaluated in their first PA isolation. The eradication protocol consisted of: step I (1st isolation) = 3 weeks of ciprofloxacin or intravenous antibiotics + inhaled gentamicin or colistin for 3 to 6 weeks; step II (2nd isolation) = 3 weeks of ciprofloxacin or intravenous antibiotics + inhaled gentamicin or colistin for 12 weeks; step III (3rd isolation) = 6 weeks of ciprofloxacin + 6 months of inhaled gentamicin or colistin. Oropharyngeal swabs or sputum cultures were performed approximately every 2 months.
Results: Median age at first PA isolation was 17 months (age range 4 m to 13 y). Four patients received only step I, four received step II and eight received step III treatment. *P. aeruginosa* cultures post treatment were negative in 12 patients, for a period between 4 to 33 months (median of 12 m).
Conclusions: The first PA isolation occured in very young patients. Most patients needed more than one treatment and this led to a PA free-period in 75% of the patients, although the follow up in many of these patients is still short. The early age of PA acquisition among our patients is a concern and long term follow up will be crucial to evaluate if this eradication protocol will be effective in postponing chronic PA infection.

71 Follow-up of *P. aeruginosa* eradication in CF patients by RAPD analysis

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Eradication of *Pseudomonas aeruginosa* (Pa) at first isolation is possible with early antibiotic treatment. Patients who have successfully undergone eradication can be re-colonised in which case it remains to be determined whether it consists in re-growth of the same suppressed strain, or re-colonisation by a new strain.
The aim of this study was to investigate the clonal relatedness between Pa isolates in order to distinguish successful eradication (re-colonisation) from unsuccessful (re-growth), by comparing the genetic relatedness among Pa strains isolated before and after an eradication period.
Eradication treatment was evaluated using immunological and microbiological criteria (at least 3 consecutive negative respiratory cultures over a 6-month period indicating that the organism had been eradicated), and molecular methods by RAPD analysis.
After successful eradication treatment, all 26 patients were newly colonised by Pa in the study period (1998–2005), for a total of 39 new isolations.
Based on microbiological/immunological and molecular criteria, eradication was obtained in 32 (82%) and 28 (71.8%) of 39 colonisations respectively. Therefore 4 (10.2%) out of 39 colonisations were re-growth.
Molecular techniques can improve monitoring of eradication therapy, showing that antibiotic treatment has been successfully performed, however, the prevalence of true eradication is slightly lower when evaluated by genotypic criteria.